



**US Army Corps  
of Engineers**

Construction Engineering  
Research Laboratories



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## **Summary Report: Second Annual Meeting of the TES R&D User Group**

by

David J. Tazik, Alison Hill, Ann-Marie Trame, Clifford G. Rice, Timothy J. Hayden, Keturah A. Reinbold, and Chester O. Martin

This summary report is the product of a Threatened and Endangered Species (TES) User Group meeting held during 18-19 May 1995 in Washington, DC. Participants included installation, major command, and headquarters level representatives from the U.S. Army's natural resources management, training, and research communities. Primary issues addressed were the roles and responsibilities of the TES R&D User Group, and the status and direction of the U.S. Army's TES R&D program. The User Group provided specific recommendations addressing proposed products, milestones, and

species and site selection. Notably, meeting participants agreed to take a "model installation" approach focusing on Fort Stewart, Georgia, the Red-cockaded Woodpecker, and associated threatened and endangered plants and animals. A second tier of installations in the southeastern United States is also identified for related research and to provide a full cross section of training and natural resources activities that affect TES in the region. Other regions, installations, and species will be addressed in the future depending upon availability of research funding.

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## Foreword

This report was based on a Threatened and Endangered Species Research and Development User Group Meeting held during 18-19 May 1995 in Washington DC. Participation by the US Army Construction Engineering Research Laboratories (USACERL) and report preparation were funded under the US Army Environmental Quality Technology (EQT) Program under Project 4A162720A896, "Environmental Quality Technology"; Work Unit TY5, "Inventory and Monitoring of Rare, Threatened, and Endangered Species on Military Lands." The Technical Monitor was Dr. Victor Diersing, ACS(IM), DAIM-ED-N.

This report was prepared by the Natural Resources Assessment and Management Division (LL-N) of the Land Management Laboratory (LL), USACERL. Dr. Alison Hill planned and arranged the meeting. Mr. Chester Martin, US Army Waterways Experiment Station (USAEWES) assisted in preparations for the meeting along with Mr. Tim Hayden, Ms. Ann-Marie Trame, Dr. Keturah Reinbold, and Dr. Clifford Rice (all of USACERL), and Mr. Phillip Pierce, Office of the Director of Environmental Programs (ODEP). Ms. Debra Cassels (USACERL) prepared program documentation for distribution at the meeting. Ms. Ann-Marie Trame recorded meeting proceedings. The USACERL principal investigator and Acting Division Chief (CECER-LLN) is Dr. David J. Tazik. Dr. William D. Severinghaus is Operations Chief, CECER-LL. The USACERL technical editor was Gloria J. Wienke, Technical Resources.

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# 1 Introduction

## Background

The second annual meeting of the Threatened and Endangered Species (TES) research and development (R&D) User Group was conducted in Washington, DC during 18-19 May 1995. An agenda is provided in Appendix A. The meeting was attended by 26 persons representing installation, major command (MACOM), and headquarters levels from the US Army's natural resources management, training, and R&D communities. Participants are listed in Appendix B. Minutes are on file at the US Army Construction Engineering Research Laboratories (USACERL).

The Army's TES R&D program is being developed within the framework established by the TES R&D Strategy.<sup>1</sup> This strategy calls for the establishment of a user group whose purpose is to identify and prioritize TES R&D user requirements and periodically review the status of the TES R&D program. The TES R&D User Group was established in February 1994 when it met to describe TES problems faced by the Army and the research products needed to address those problems.<sup>2</sup> The prioritized requirements list developed is provided in Appendix C.

Since that time, the US Army Corps of Engineers (USACE) research community has developed and executed a number of research work units designed to address Army TES R&D requirements. The TES User Group met in May 1995 to review the status and direction of these efforts. This report summarizes the results of that meeting.

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<sup>1</sup> David J. Tazik and Chester O. Martin *US Army Threatened and Endangered Species Research and Development Strategy and Action Plan*, USACERL Special Report EN-94/06 ADA284207 (June 1994).

<sup>2</sup> TES user requirements were originally extracted from a larger set of Conservation Pillar user requirements defined at a meeting conducted in September 1993 under the auspices of the Department of the Army Office of Environmental Programs. (See Andrus Research Corporation, *Final Report: US Army Environmental Research and Development Requirements*, Arlington, VA [January 1994].)

## **Objectives**

The objectives of the May 1995 TES User Group meeting were to:

1. Present progress and direction of TES R&D work units, including on-going and planned research and products.
2. Obtain direct feedback from the TES User Group in the form of recommendations addressing proposed products, milestones, and species and site selection.
3. Discuss and agree on the roles and responsibilities of the TES User Group.

## **Approach**

The meeting consisted of three parts. The participants first discussed and came to consensus on the roles and responsibilities of the User Group. This was critical to ensuring that all participants understood the nature of the user review process and what was expected from this and future User Group meetings. Secondly, the USACE research staff presented information on the status of individual work units and how they related to the user requirements defined. The final session consisted of a meeting of the User Group to develop and report recommendations.

## 2 Results and Recommendations

### User Group Roles and Responsibilities

Three main issues were addressed in the discussion of TES User Group roles and responsibilities: membership, function and scope, and frequency of meetings.

#### *Membership*

The Army Major Commands (MACOMs) represent the core group of voting members. Other participants serve in an advisory, non-voting role. Advisory members include representatives from:

Headquarters, Department of the Army (HQDA)

- Office of the Director of Environmental Programs (ODEP)

- Office of the Deputy Chief of Staff for Operations and Plans (ODCSOPS)

Army Environmental Center (AEC)

Army Training Support Center (ATSC)

Installations (upon MACOM invitation)

In the future the User Group will:

1. Encourage broader OCONUS (other than continental US) participation.
2. Consider DoD and tri-service participation.

3. Consider participation by the US Fish and Wildlife Service (USFWS) and the National Biological Service (NBS).<sup>3</sup>

### ***Function and Scope***

The primary functions of the TES User Group are to:

1. Define and refine, as necessary, user requirements for TES-related R&D. This may involve periodic adjustments in those requirements as priorities and our own understanding of the problems evolve.
2. Describe anticipated R&D products from the user's point of view.
3. Monitor the progress and direction of the research effort relative to the user requirements defined and critical product milestones identified. The intent is to provide direction and focus, not to specify how the research is executed.
4. Facilitate access to priority installations on which to execute proposed research activities.

Periodic TES R&D User Group reviews will address military direct-funded research, including Army and related DoD research programs conducted by each of the four USACE labs.

### ***Meetings***

As a rule, the group should meet on an annual basis. The primary purpose of the annual meeting is to obtain feedback from group members as a basis for adjusting the scope and direction of the R&D program, if warranted, given new knowledge and changing circumstances. There may be a need to meet more often in the early phases of the TES field research effort in order to ensure proper user input to the TES R&D planning process.

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<sup>3</sup> The National Biological Service is now the Biological Resources Division within the U.S. Geological Service.

## **TES R&D Program Activities**

Individual R&D work efforts addressed on the following pages focus on proposed actions and the points of contact (POCs) for those actions that respond to User Group recommendations made at the workshop. Action milestone dates are indicated where appropriate. Detailed descriptions of individual work units are summarized in handouts provided at the User Group Meeting. Additional copies and more detailed information are available from the Land Management Laboratory at USACERL upon request. Unless otherwise indicated, each of the following efforts is funded under the US Army Environmental Quality Technology (EQT) Program.

### ***TES R&D Project Survey***

A survey instrument has been developed by USACERL in accordance with requirements of the TES R&D Strategy to document recent, on-going, and planned TES-related R&D activities at the USACE labs, covering both military and civil works programs. The primary objectives are to establish an information baseline upon which to plan future TES research and to keep potential interagency partners and military installations informed about our research activities. This effort is funded by the TES Inventory and Monitoring and TES Survey and Applications Development work units.

USACE Labs will:

1. Present a copy of the database at the 17-18 July Conservation Pillar In-Progress Review (IPR). (4QFY95)
2. Plan to distribute the final database on diskette in several database formats and explore distribution through DENIX. (1QFY96)
3. Provide a copy of the survey to Army Materiel Command (AMC) for their use in obtaining information on the status of any TES-related work conducted within their research activity (e.g., Chemical and Biological Defense Command). (4QFY95)
4. Coordinate with the Office of the Director of Environmental Programs (ODEP) on a related environmental R&D survey initiative. (3QFY95)

USACE Lab POC: Dr. Alison Hill, CECER-LL-N

### ***Regional TES Interagency Workshops***

We plan to conduct a regional TES interagency workshop in Atlanta during the first quarter of Fiscal Year 1996 (1QFY96). Army, USFWS, and Biological Resources Division of USGS will co-host the meeting. Objectives of the proposed workshop are to:

1. Identify existing ecological information, technologies, and methodologies that can be used to manage TES more effectively.
2. Help focus Army inventory, monitoring, and research efforts on critical information needs and technology gaps.
3. Identify opportunities for future interagency coordination and cooperation.
4. Evaluate the utility of conducting additional regional workshops in the future.

The Army Environmental Policy Institute (AEPI) is currently assisting with logistics for the meeting. Forces Command (FORSCOM) has also offered assistance. This effort is being funded by the TES Inventory and Monitoring work unit and SERDP.

USACE Labs will:

1. With the concurrence of agency co-hosts, modify the proposed approach to invite broad participation by the regional conservation science community. (3QFY95)

USACE Lab POC: Dr. Cliff Rice, CECER-LL-N

### ***Regional Strategies for TES Management***

This work unit focuses on regional, habitat, and community-based strategies for management of TES on military lands. The intent is to take a multiple species approach, recommending methods for assessing and managing TES that apply to

several species and across the geographic region.<sup>4</sup> This study helps move the program toward an ecosystem approach in accordance with recent DoD policy and provides a good framework for our overall regional TES R&D approach (see Model Installation, page 17). This work is funded by SERDP.

USACE Labs will:

1. Incorporate consideration of current, especially community and ecosystem-based, endangered species recovery plans in development of TES habitat and community management recommendations.
2. Coordinate with MACOMs on listed species known to occur on installations of interest. (4QFY95)
3. Coordinate further with the USFWS to avoid duplication of their efforts. (4QFY95)
4. Evaluate applicability of other regional delineations, such as that used in the Partners in Flight (PIF) Program. The USFWS's watershed-based ecosystem approach will also be further evaluated. (4QFY95/1QFY96)
5. Modify the map showing the location of installations within the southeastern region to ensure that all relevant installations in the southeast are identified. (4QFY95)
6. Incorporate additional information available from FORSCOM and AMC.

USACE Lab POC: Chester Martin, CEWES-EN-S

#### ***Enhancing Survival and Recovery of TES Plants***

This project, funded by SERDP, was originally intended to conduct research on propagation and translocation of TES plants. Based on Army and USFWS input, the focus has been expanded to encompass the whole range of potential strategies available to enhance conservation of TES plants on military lands.

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<sup>4</sup> C.O. Martin, et al., *Regional Strategies for Managing Threatened and Endangered Species Habitats: A Concept Plan and Status Report*, USAEWES Technical Report SERDP-96-1 ADA306953 (March 1996).

Establishing strategies for management of TES plants now will help avoid unwarranted constraints on mission activities in the future.

USACE Labs will:

1. Focus on the Army. Although this is a DoD-funded effort under SERDP, because of the higher probability of negative impacts on the Army as compared to other Services due to the nature of the Army's land-based mission, activities will focus on the Army. Results should apply broadly in any case.
2. Give particular attention to candidate species to identify actions that can be taken now to avoid future listing.
3. Not focus on propagation and translocation since the USFWS and the Army view these as actions of last resort.
4. Focus, in part, on plant species associated with Red-cockaded Woodpecker (RCW) habitat. The intent is to help ensure that RCW management does not lead to unwarranted negative impacts on TES plants.
5. Prioritize species upon which to focus research attention within a regional context and with ecosystem management considerations in mind. MACOM and ODCSOPS representatives will be contacted to help validate information used in the prioritization protocol. (4QFY95)
6. Coordinate with nonmilitary interests primarily via state Natural Heritage Programs and other local groups as appropriate. The intent here is to help reduce the management burden on installation lands.

USACE Lab POC: Dr. Alison Hill, CECER-LL-N

#### ***Inventory and Monitoring of Threatened and Endangered Species***

Inventory is the obvious first step necessary for the development of viable strategies for TES management. Although this is not a military-unique requirement, it is in the Army's interest to establish and implement scientifically sound standards for conducting TES surveys and inventories on its land. The same applies to monitoring, which is designed to evaluate trends in the status of TES and their habitats over time in response to management and land use activities.

USACE Labs will:

1. Coordinate this research effort closely with the USFWS and Biological Resources Division/USGS. The USFWS is the primary regulatory agency with which the Army interacts on TES issues. It is necessary to ensure their acceptance of the approach developed by the Department of the Army for compliance purposes. The Biological Resources Division/USGS is the federal bureau with lead responsibility for development of biological inventory and monitoring standards.
2. Address the potential applicability of the current Land Condition Trend Analysis (LCTA) program to TES inventory and monitoring needs as part of the research effort. (FY96)
3. Clearly articulate the defensibility of the methods proposed and results obtained, and assess the relative costs of various inventory and monitoring options.

USACE Lab POC: Cliff Rice, CECER-LL-N

#### ***TES Survey and Application Development***

This work unit comes to an end this fiscal year. Its objective has been to establish a systematic, cost-effective capability to track, summarize, and report on the status, trends, direct and indirect mitigation/management activities, and expenditures on TES Army-wide. Recent Congressional inquiries as to the status of TES on Army lands increase the importance of this effort. Follow-on work is needed to demonstrate, validate, and implement the survey and tracking system.

USACE Labs will:

1. Develop a recommended set of survey questions to go to the field based on lessons learned from our previous experience under this work unit. This will be in the form of an annual survey that is easy to use by field personnel. The revised questionnaire shall include a question about sources of information used to answer the questionnaire. (4QFY95)
2. Provide a draft questionnaire to the TES User Group for their review. (4QFY95)

3. Coordinate closely with ODCSOPS regarding questions dealing with impacts of TES on military operations. (4QFY95)
4. Prepare and submit a reimbursable proposal to finalize the survey questionnaire, conduct the survey, compile the results, and complete data analysis applications. (4QFY95)
5. More clearly describe the benefits of this effort as it applies to installation, MACOM, and DA levels. (4QFY95)
6. Coordinate with AEC to move beyond the research phase into a standardized system.

Lab POC: Dr. Alison Hill, CECER-LL-N

ODEP will:

1. Coordinate, as appropriate, with the Office of the Assistant Secretary of the Army (Installation, Logistics, and Environment) (ASA IL&E). Specifically, determine the acceptability of an annual survey to meet potential Congressional inquiries. (4QFY95)

ODEP POC: Mr. Phil Pierce, DAIM-ED-N

ODCSOPS will:

1. Provide input to questions dealing with impacts of TES on the military mission. (4QFY95)

ODCSOPS POC: Mr. Tom Macia, DAMO-TRO

#### ***Mitigation and Management Strategies for Endangered Species***

The emphasis of this work has been on evaluating current Army management and mitigation for TES on Army lands, with primary focus on the Red-cockaded Woodpecker (RCW). The study specifically examined effectiveness of cavity augmentation to enhance reproduction, developed a cavity tree data management capability, evaluated the effects of fire on game species associated with the RCW, and investigated the relationship between disturbance regimes and occurrence of species of concern within the longleaf pine ecosystem type. FY95 is the last year for this project.

USACE Labs will:

1. Prepare a final report describing results of this project. (4QFY95)

POC: Mr. Tim Hayden, CECER-LL-N

#### ***Maneuver Training Impacts on TES***

This work unit was initiated during FY95. The focus is on physical disturbance effects associated with a wide range of maneuver activities. Given the nature of military training, it is apparent that physical disturbance is not easily separated in time and place from associated acoustic and chemical disturbances. As such, a closely coordinated effort is anticipated with the two remaining projects described below (dealing with noise and smokes and obscurants). Furthermore, this work unit will serve as the point of coordination for USACE research addressing impacts of military operations on TES.

USACE Labs will:

1. Work in coordination with ODCSOPS to more clearly integrate critical training considerations in the study design and execution.
2. Address concerns regarding the ability to generalize across installations within an ecological region by:
  - a. Coordinating with multiple installations within the region early on.
  - b. Designing research products (i.e., tools, techniques, and approaches) that are applicable across installations.
  - c. Coordinating with the USFWS to enhance likelihood of their accepting the results and products for application elsewhere.
3. Coordinate with the MACOMs, ODEP, and ODCSOPS in selection of second tier installations (see Model Installation, page 17). (4QFY95)
4. More clearly define what information and assistance is needed to execute the research effort. Specifically, staff a formal information request to ODCSOPS via ODEP. (4QFY95)
5. Coordinate any necessary incidental take permits with the USFWS.

6. Prepare a briefing package for presentation to the ODCSOPS Director of Training during 4QFY95. Prebrief the ODEP as well. (4QFY95)

USACE Lab POC: Mr. Tim Hayden, CECER-LL-N

ODEP will:

1. Coordinate the proposed TES research briefing, as appropriate, with the Assistant Chief of Staff for Installation Management (ACSIM) and ODCSOPS. (4QFY95)

ODEP POC: Mr. Phil Pierce, DAIM-ED-N

ODCSOPS will:

1. Compile a "non-Army jargon" description of training activities for use by the R&D community to better understand the nature of the maneuver activities to be studied. (2QFY96)
2. Facilitate access to installation trainers and range management offices to provide relevant historical information available from the Combat Training Centers at Fort Irwin, Fort Polk, and Hohenfels and access to current training activities on selected installations. (2QFY96)

ODCSOPS POC: Mr. Tom Macia, DAMO-TRO

#### ***Noise Effects on TES***

This work unit is not scheduled to begin until FY96. However, an extensive literature review on the subject has been completed under related research efforts.<sup>5</sup> A report will be available later. The intent is to provide noise dose-response models for specific combinations of noise type and species, and to develop methodologies that installations can use to assess, monitor, and manage impacts of military noise on TES behavior and reproductive success.

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<sup>5</sup> Ronald P. Larkin, Larry L. Pater, and David J. Tazik, *Effects of Military Noise on Wildlife: A Literature Review*, USACERL Technical Report 96/21 ADA 305234 (January 1996).

USACE Labs will:

1. Define the types of noise of interest and work with the TES User Group to prioritize the specific noise types on which to focus our research efforts.<sup>6</sup> (1QFY96)
2. Capture artillery noise under the broad category of blast noise. (1QFY96)

USACE POC: Dr. Larry Pater, CECER-LL-P

#### ***Impacts of Smokes and Obscurants on TES***

Two related work units are contributing to this effort. One work unit is directly funded by the Army through the USACE; the other by SERDP. These are designed to be complementary efforts with the objective of evaluating the impacts of smokes, obscurants, and tear gas agents (CS) on TES. The SERDP work unit, Chemical Impacts on Threatened and Endangered Species, is intended to evaluate the range of potential chemical hazards likely to be faced by TES on military lands, assess the effects of environmentally hazardous materials, develop protocols for evaluating direct and indirect effects in the field, and recommend mitigation/management procedures. Objectives of the USACE-funded work unit, Impacts of Smokes and Obscurants on TES, are to determine impacts of military smokes, obscurants, and CS on TES; specifically, develop risk assessment methods and models to assess these effects, and develop monitoring methods to assess and monitor smoke and obscurant impacts.

USACE Labs will:

1. Focus on Fort Stewart for the research effort (see Model Installation, page 17), but also conduct work at Fort McClellan, where the Smokes School is presently located, and investigate activities at Dugway Proving Ground. Eglin AFB is of interest because of information available there on smokes testing, their interest in the work, and DoD support for this work under SERDP.

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<sup>6</sup> The User Group appeared to concur that maneuver noise is of primary concern.

2. Evaluate the feasibility of researching the acute and chronic effects on microbial and chemical properties of soils, and consequent implications for TES under these work units (1QFY96)
3. Evaluate the feasibility of assessing effects on aquatic organisms under these work units. (1QFY96)
4. Be unable to address questions related to possible movement of the Smokes School to Fort Leonard Wood because of the short timeline involved.
5. Coordinate with the USFWS on the choice of surrogate study species and applicability of research results across installations within the region. (4QFY95)
6. Focus initially on impacts of fog oil smokes.<sup>7</sup>

USACE Lab POC: Dr. Keturah Reinbold, CECER-LL-N

### **Model Installation**

An important result of this meeting was to select Fort Stewart, Georgia as the focal point or model installation for the proposed research efforts. The intent is to focus the largest share of research activity at this installation. A second tier of installations was also identified which will have a smaller, but nonetheless important, research and information gathering mission (see the following paragraphs).

The model installation approach has several advantages by helping to:

1. Leverage the various work unit research dollars at a limited number of critical sites.
2. Integrate the various research work units so that they mutually support one another and allow for execution in an ecosystem management context. That

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<sup>7</sup> Lowell L. Getz, et al., *Preliminary Assessment of the Potential Impact of Fog Oil Smoke on Selected Threatened and Endangered Species*, USACERL TR 96/38 ADA 308219 (January 1996).

is, by conducting inventory, impact and risk assessment, mitigation/management, and monitoring research on a selected set of species at the selected site USACE will be able to attack the problem in a more comprehensive and systematic fashion to the benefit of both research and operational management activities.

3. Establish a close working relationship between researchers and the installation level users that will pay off in enhanced utility and portability of research products developed.
4. Establish a systematic framework for well-coordinated interaction and cooperation with the range management and training community.

The decision to focus on the southeastern United States is related in large part to the presence of the RCW on numerous installations in the region. Similarity in plant communities and other TES (listed and former candidates) present on these installations, and the large number of military installations in the region are major drivers as well. The research activity may expand to model installations in other regions as the opportunity arises and additional research funding becomes available.

Fort Stewart was volunteered by FORSCOM as the model installation because:

1. Its large size affords ample room to conduct a variety of research activities with little or no conflict with the mission. In particular, there are areas available to set up controlled field experiments.
2. The installation is interested in the research effort and is willing to accommodate necessary research activities.
3. A good working relationship exists between the Range Management and Environmental Offices that will be important to the success of the research mission.
4. The installation is well staffed (as are most other installations) with highly experienced, natural resources management and range operations professionals.

Although Fort Stewart does not have as much historical TES data as some other installations in the southeast, this can be overcome by leveraging research and operations funding available to the USACE Labs and the installation

respectively. Related research and data collection efforts on the installation will be closely coordinated to mutual advantage.

Practically speaking, the limited research dollars available dictate a focus on a limited number of species and installations. The RCW is a logical choice for a focal species since 1) the species has had significant impacts on Army training during the past 10 to 20 years, and 2) it does occur on many installations in the southeast.

The research approach will maximize the transferability of tools, technologies, protocols, guidelines, etc. to other species and installations. However, transferability will be limited to a varying extent due to ecological and land use differences. As such, there will be a need to expand the research effort strategically to other species and installations in the region. Specifically, a second tier of installations has been identified at which USACE will:

1. Observe training mission activities, and develop a comprehensive understanding of the broad range of training missions executed in the region.
2. Seek out appropriate supplemental and complementary natural resources and training data.
3. Propose and execute, if warranted, supplemental and complementary research, demonstration/validation, and other data collection activities.

These installations include Forts Polk, Bragg, McClellan, Benning, Jackson, and Rucker, Louisiana Army Ammunition Plant, Leesburg Training Site, and selected Air Force sites. The latter is contingent upon coordination and concurrence of the US Air Force.

Ultimately, there will be a need to initiate research on installations in other regions. The User Group requested that eventually USACE conduct research that addresses priority species and installations in other regions.

# Appendix A: Agenda

## **TES User Group Meeting**

Date: 18-19 May 1995 (Thursday and Friday)

Place: Holiday Inn, 2460 Eisenhower Ave., Alexandria VA 22314

703-960-3400, POC: Alison Hill

### Purpose of Meeting:

- To present progress and direction of TES R&D work units, including on-going and planned research and products.
- To obtain direct feedback from the TES User Group in the form of recommendations addressing proposed products, milestones, and species and site selection.
- To discuss and agree on the roles and responsibilities of the TES User Group.

## **TES User Group Meeting Agenda Thursday 18 May**

800 - 810	Welcome and Introductions	A. Hill
810 - 820	Purpose and objectives	A. Hill
820 - 900	Roles and responsibilities of the TES User Group	D. Tazik
900 - 915	TES R&D Project Survey	A. Hill
915 - 930	Regional TES Interagency Workshops	D. Tazik

930 - 945	TES R&D Program Overview	D. Tazik
945 - 1000	Break	
1000 - 1040	SERDP Projects (15 min. presentations, 5 min. questions)	
1000 - 1020	Regional Strategies	C. Martin
1020 - 1040	Enhancing Survival and Recovery of TES Plants	A. Hill
	Smokes and Obscurants	K. Reinbold
	(Postponed until 1545)	

## Inventory & Monitoring Work Units Briefings

1045 - 1130	Inventory and Monitoring	C. Rice
1130 - 1245	Lunch	
1245 - 1330	TES Survey and Application	
	Development	A. Hill
1330 - 1345	Mitigation/Management Strategies	
	for Endangered Species	T. Hayden

## Training Impact Work Unit Briefings

1345 - 1355	Training Impact Overview	T. Hayden
1355 - 1435	Maneuver Training Impacts on TES	T. Hayden
1435 - 1450	Break	
1450 - 1540	Noise effects on TES	L. Pater

1540 - 1645 Smokes and Obscurants K. Reinbold

1645 - 1700 Wrap up for day/discussion on tomorrow's agenda

1700 Meeting ends

1700 - 1730 Discussion of Army meeting in Tacoma MACOM and HQ

Friday 19 May

0800 - 1000 User Groups meets to discuss TES R&D projects and to prepare response and specific consensus recommendations. These should be specific to work units discussed focusing especially on products, milestones, and species and site selection.

1000 - 1015 Break

1015 - 1030 Users present recommendations to R&D staff

1030 - Noon Discussion

1200 - 1300 Lunch

1300 - 1400 Wrap up discussions

## Appendix B: List of Participants

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## Appendix C: Prioritized List of Army User-Defined TES R&D Requirements

Rank	Title	Problem Statement	R&D Products
1	Impacts of Military Operations on TES	<p>TES requirements are driven by the ESA. They present an important and growing impact on military operations on Army lands and have stopped training in some cases. There is an urgent need to determine the extent to which military actions impact TES. Without these data, the USFWS is forced to apply the most stringent standards to protect TES.</p>	<p>Report on the threshold of sound disturbance for essential activities</p> <p>Report on the threshold of disturbance of smoke and obscurants</p> <p>Report on the threshold of disturbance of habitat by tactical combat vehicle maneuvering or individual foot soldiers</p>
2	Baseline Inventory and Monitoring Technology	<p>Installations need scientifically defensible, statistically valid, cost effective sampling protocols for flora and fauna. These protocols must accommodate changing scientific and regulatory requirements while addressing mission needs.</p>	<p>Resource inventory standards.</p> <p>Protocol manual for inventories and population monitoring with accompanying software package. Software must be stand alone or be compatible with LCTA. Systems tracing requirements must be minimal.</p>
3	Mitigating Army-unique Impacts	<p>Many of the impacts occurring on military installations are unique to the military and cannot be solved by off-the-shelf technology. These include, but are not limited to, chemical contamination of soil and water, excessive soil erosion, unlawful "taking" of threatened and endangered species, and elevated noise levels. Some of these causes are: tactical vehicle use, noise, obscurants, riot control agents, explosive impacts, demolition materials (soil and water contaminants), and helicopter rotor wash impacts. Research is needed to quantify these impacts on soils,</p>	<p>This requirement has not been discussed by the TES Task Area Committee. However, it appears relevant and should be discussed at the next working group meeting.</p>

Rank	Title	Problem Statement	R&D Products
		flora, fauna, water, and human health and welfare. Once quantified, technology needs to be developed or adapted to mitigate ongoing impacts	
4	Safety Issues	<p>Natural resources managers could make more effective use of scarce resources, time and funding if they have access to technologically advanced tools to aid in surveying and monitoring efforts. There is a need to inventory and monitor TES by remote means for both safety and efficiency reasons. Human health and safety is at risk from exposure to unexploded ordnance (UXO) detonation while completing surveying and monitoring tasks in dudded areas. Large scale areas that would otherwise be very time consuming and costly to study would also benefit. The potential for incorporating military sensors should be assessed.</p>	<p>Need to research the technology available for the above reasons. We envision, for example, acoustic, thermal imaging, and suites of technologies capable of surveying/monitoring species. Species of immediate concern (not prioritized) include bats, aquatics, plants, sage grouse, RCW, desert tortoise. This should be a multiple phase approach in order to maximize flexibility.</p> <p>Phase I: Identify technologies available for meeting stated objectives. Ascertain mix of suites of technologies which may be appropriate for species of concern.</p> <p>Phase II: Determine the viability of technologies to survey specific species. Ascertain from the field which species should be focused on. Develop prototypes and demonstration projects to field systems.</p>
5	Cluster Modeling for the RCW	<p>Military use of training land is constrained by the need to provide habitat to support the Red-cockaded Woodpecker (RCW). There is a need for installation-specific models to evaluate these constraints. The priority subjects to be addressed are:</p> <p>(1) Are training constraints within cluster boundaries adequate to protect the species? (Are size of clusters appropriate to protect RCW from various training activities?; Is there a seasonal variation in cluster size which might lessen constraints in the non-breeding season);</p>	<p>Summary of existing data</p> <p>Monitoring protocol</p> <p>Determination of seasonal constraints (variation?)</p> <p>Location-specific method of determining foraging area requirements</p>

Rank	Title	Problem Statement	R&D Products
		<p>(2) Are foraging habitat requirements realistic? Evaluate foraging habitat requirements based on foraging habitat analyses of current (active) cluster using existing basal areas, no. of 10" stem requirements (reviewed by USFWS). Do these requirements fluctuate between single and multiple species stands? Regional differences?</p> <p>(3) Forestry management practices have been detrimental at some installations. There is a need to evaluate forestry management practices that may be having adverse impacts on RCW management. Some timber sales are not following Bluebook guidelines.</p>	
6	Spatial Aspects of TES Habitat	<p>The spatial requirements of TES are poorly understood and/or entirely unknown. At this point in time, there is no method by which to balance competing needs of different TES and to overlay mission needs for land management.</p>	<p>Protocols that characterize and quantify spatial habitat characteristics, generate spatial scenarios, allow spatial manipulation, give cumulative TES impact assessments, and do cost analysis.</p>
7	TES Habitat Suitability Modeling	<p>The loss of TES is most often due to loss of suitable habitat. A model to predict changes in habitat currently occupied by the species is needed. This should also predict where suitable habitat for the species can be (re)established (based on soil type, microclimate, and other appropriate parameters), or otherwise enhanced or restored to ensure recovery and maintenance of the populations.</p>	<p>Assess existing models for applicability to installation requirements.</p> <p>Collection of data at installation for validation of models</p> <p>User friendly software to operate models. Should be modular format for portability to user community (species specific).</p> <p>Demo in graphic format showing current and predicted (potential) distributions.</p>
8	Population Modeling and TES	<p>In order to prevent unnecessary impacts from ESA to mission activities, methods are needed to determine realistic population goals for individual TES on each installation on which they occur.</p>	<p>This requirement was not fully discussed by the TES Task Area Committee. Further discussion is warranted.</p>

Rank	Title	Problem Statement	R&D Products
		<p>During consultation with USFWS, TES compliance decisions are made based largely on estimated population viability and recovery requirements. AR 200-03 also requires Army installations to establish individual TES goals for their installation. Objective criteria and modeling capabilities, including military mission and carrying capacity, are needed to establish and justify these population goals in the context of the Army-unique mission. These will also be integrated with landscape/ecosystem models developed for overall ecosystem management/modeling.</p>	

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### **Participants (26)**

**40**

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